robbe

ARROW

Operating Instructions

Features:

- Visually and technically upgraded version of the Arrow Plus Trainer EVO
- Main rotor blades and tail stabiliser with LED lights
- High-quality set including computer transmitter
- Numerous black anodised metal parts

ARROW PLUS TRAINER Black Bullet RTF FTR 2.4 GHz

No. S2538

V02/02/14

FUTABA Transmitter Ready

FUTABA Transmitter Ready, abbreviated to FTR, applies to various models from the Nine Eagles range. The transmitter and receiver supplied with these models operate with the FUTABA S-FHSS code, which means that they can also be controlled using any FUTABA transmitter which can be set to S-FHSS mode.

At present these are the following transmitters:
T6J-R2006GS 2.4 GHz FHSS, No. F4100
T-8J - R2008SB 2.4 GHz FHSS/S-FHSS, No. F4108
T18MZ-R7008SB 2.4 GHz FASSTest M2, No. F8073
T18MZ-R7008SB 2.4 GHz FASSTest M1, No. F8073M1
T-14SG-R7008SB 2.4 GHz FASSTest M2, No. F8075
T14SG-R7008SB 2.4 GHz FASSTest M1, No. F8075M1
FX-32-R7008 2.4 GHz FASSTest, No. F8078

Using the S-FHSS General Link module

(Order No. NE480193)
If you intend to fly the model using a FUTABA transmitter without S-FHSS transmission system, or a different make of transmitter, you will need the S-FHSS General Link module. Before using the General Link module it is essential to read through the instructions supplied with the unit, since various settings have to be entered on the module, e.g. operating mode "F", and at the transmitter, e.g. Trainer mode.
The new S-FHSS General Link module is available as an individual low-cost set complete with all necessary accessories.

Explanation of specialist terms:

Motor speed ("Throttle"):
This controls the model's climb and descent.

Yaw:
The model's movement around the vertical axis; the helicopter rotates to right or left.

Pitch axis:
The model's movement around the lateral axis, forward or reverse flight

Roll:
The model's movement around the longitudinal axis, sideways movement to right or left

Mode 1:
Function assignment of control movements relative to the sticks.
In this case motor speed (throttle) and roll are controlled by the right-hand stick; pitch-axis and tail rotor by the left-hand stick.

Mode 2:
Function assignment of control movements relative to the sticks.
In this case motor speed (throttle) and tail rotor are controlled by the left-hand stick; pitch-axis and roll by the right-hand stick.

Dual-Rates:
Switchable travel reduction for control movements.

Binding:
Creating the radio link between transmitter and receiver.

Contents

Be sure to read these Safety Notes before you operate your model. Always observe the procedures and settings recommended in the instructions.

If you are operating a radio-controlled model aircraft, helicopter, car or boat for the first time, we recommend that you enlist an experienced modeller to help you.

Safety Notes

Radio-controlled models are not toys in the usual sense of the term. Young persons under fourteen years should only be allowed to operate them under the supervision of an adult.

Building and operating these models requires technical expertise, manual skills, a careful attitude and safety-conscious behaviour.

Errors, negligence and omissions in building or flying these models can result in serious personal injury and damage to property.

Since the manufacturer and vendor are not in a position to check that your models are built and operated correctly, all we can do is bring these hazards expressly to your attention. We deny all further liability.

⚠ **Helicopter rotors, and all moving parts generally, constitute a constant injury hazard. It is essential to avoid touching such parts.**

⚠ **Please bear in mind that motors and speed controllers may become hot when operating. It is important to avoid touching these parts.**

⚠ Do not stand close to the hazard area around rotating parts when an electric motor is connected to the flight battery.
You must also take care to keep all other objects away from moving or rotating parts.

⚠ **Observe the instructions provided by the battery manufacturer.**
Overcharged or incorrectly charged batteries may explode. Take care to maintain correct polarity.

Ensure the equipment is protected from dust, dirt and moisture contamination. Do not subject the system to excessive heat, cold or vibration.

Use the recommended charger only, and charge the batteries only for the prescribed period.

Check your equipment for damage at regular intervals, and replace defective components with genuine spare parts.

Do not re-use any devices which have been damaged in a crash or by water, even when they have dried out again.

Send the equipment to the robbe Service Department for checking, or replace the parts in question.

Crash or water damage can result in concealed defects which may lead to failure in subsequent use.

Use only those components and accessories which we specifically recommend.

Do not carry out modifications to the radio control system components apart from those described in the instructions.

Operating the model

Caution - injury hazard:
Please keep your model helicopter - including small co-axial and single-rotor models - a safe distance away from yourself and others. Never fly over spectators, other pilots or yourself. Always fly manoeuvres facing away from other pilots and spectators. Please note that model helicopters generally, and aerobatic types in particular, are subject to enormous flight loads, and that interference cannot be ruled out even when you are using the best possible radio control system components. Operating these models requires a highly responsible attitude and all possible safety precautions for pilot and spectators.

- Never fly over spectators or other pilots, and maintain a safe distance from them at all times.
- Never endanger people or animals.
- Never fly close to high-tension overhead cables or residential areas.
- Do not operate your model in the vicinity of canal locks or open waterways.
- Do not operate your model from public roads, motorways, paths and squares etc.; use authorised model flying sites only.
- **Never operate the model in stormy weather.**

Never "point" the transmitter aerial straight at the model when operating it. The transmitter signal is at its weakest in this direction. It is always best to stand with the long side of the aerial angled towards the model.

Insurance

Ground-based models are usually covered by standard personal third-party insurance policies. In order to fly model aircraft you will need to extend the cover of your existing policy, or take out specific insurance.
Check your insurance policy and take out new cover where necessary.

Liability exclusion:

robbe Modellsport is unable to ensure that you observe the assembly and operating instructions, or the conditions and methods used for installing, operating and maintaining the model components.
For this reason we accept no liability for loss, damage or costs which are due to the erroneous use and operation of our products, or are connected with such operation in any way.

Regardless of the legal argument employed, our obligation to pay compensation is limited to the invoice value of those robbe products directly involved in the event in which the damage occurred, unless otherwise prescribed by law. This does not apply if the company is deemed to have unlimited liability according to statutory regulation due to deliberate or gross negligence.

Set contents:

- Single-rotor helicopter in "Black Bullet" night-flying colour scheme, completely factory-assembled, set up ready to fly.
- JF5 Pro 2.4 GHz S-FHSS LCD transmitter
- Main rotor blades and tail stabiliser with LED lights
- LiPo battery, 7.4 V / 1000 mAh
- Two CR2016 3 V button cells for rotor blade lights
- Battery charger with mains PSU
- Allen key
- German operating instructions

Dear customer,

Congratulations on choosing a factory-assembled model helicopter from our range. Many thanks for placing your trust in us.

The model can be completed and prepared for flight very quickly. Please read right through these instructions before attempting to fly the model for the first time, as this will make it much easier to operate the model safely.

All directions, such as “right-hand”, are as seen from the tail of the model, looking forward.

Specification:

Main rotor diameter:	approx. 385 mm
Tail rotor diameter:	approx. 95 mm
Length:	approx. 415 mm
Height:	approx. 150 mm
All-up weight:	approx. 265 g
Power supply:	LiPo battery, 7.4 V / 1000 mAh

RC functions:

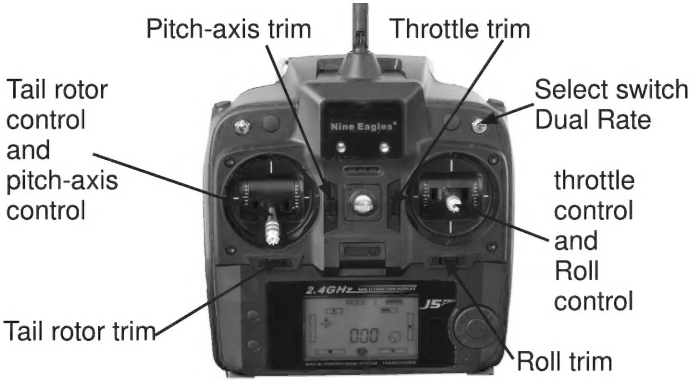
Pitch-axis, roll, yaw, climb / descent

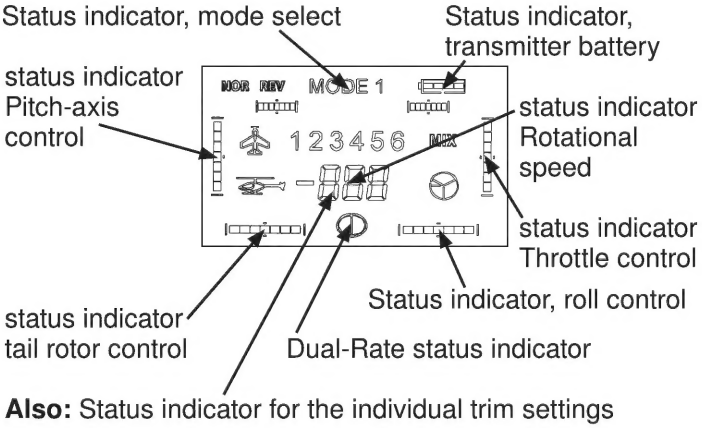
Recommended accessories:

8x 8008 NiMH AA-cell, 1.2 V / 2500 mAh

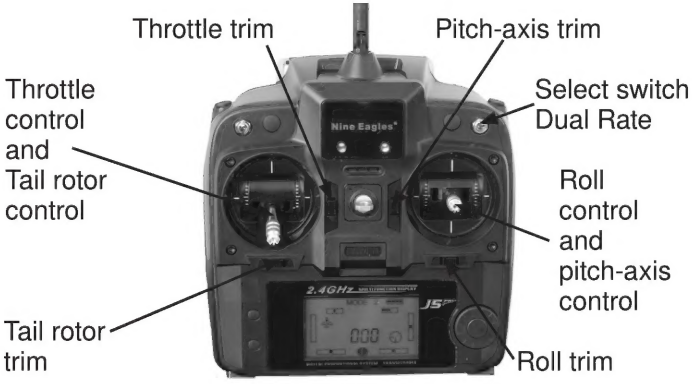
Please be sure to observe the safety notes regarding the safe handling of Lithium-Ion-Polymer batteries.

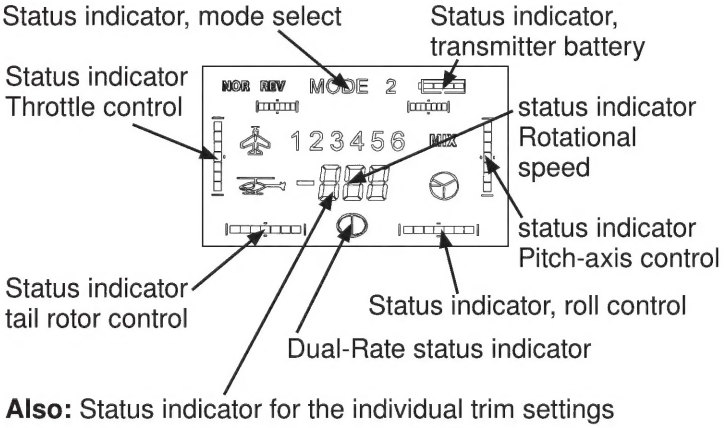
Transmitter settings, Mode 1:





Transmitter settings, Mode 2 (as supplied):





"Primary" and "expanded" control function setting

The transmitter offers the facility to adjust the sensitivity of the stick movements. We recommend "softer" reduced travels for beginners.
Open the transmitter battery compartment and insert the eight AA-size NiMH cells (maintain correct polarity).

Switching sensitivity:

Switch the transmitter on.

Reduced control function:
Locate the toggle switch at top right of the transmitter, and move it down. The "Status indicator, Dual Rate" disc is reduced to half.

Expanded control function:
Locate the toggle switch at top right of the transmitter, and move it up. The "Status indicator, Dual Rate" point is shown in full.

Converting the transmitter from "Mode 2" (throttle left) to "Mode 1" (throttle right)

The transmitter is supplied set to Mode 2 as standard. If you prefer Mode 1 and wish to convert the transmitter to that mode, use this procedure:

The transmitter must be switched off.

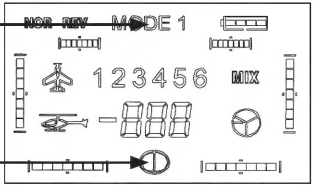
Open the central cover over the battery compartment in the centre of the transmitter back panel: this is accomplished by squeezing both retaining clips together with two fingers, and withdrawing the cover upwards.

The toggle switches located under the cover are used to select Mode 1 and Mode 2:
Toggle switch up = Mode 1
Toggle switch down = Mode 2

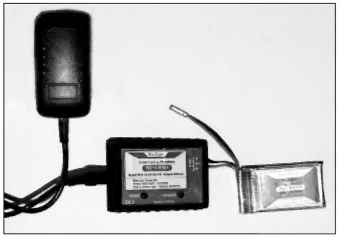
You can now close the battery cover and switch the transmitter on. The screen displays the new setting.

Status indicator, mode select

Dual-Rate status indicator (see left)



Charging the flight battery



Connect the battery charger to the mains PSU, and plug the PSU into a mains socket.
The red monitor LED on the charger lights up, and the charger emits a brief "beep". Connect the battery to the charger. The charger emits a brief "beep"; during the charge process the green monitor LED on the charger flashes. When the charge process is complete, you will hear a further brief "beep", and the green monitor LED on the charger glows constantly. Disconnect the battery from the charger, then disconnect the mains PSU from the wall socket.

Safety Notes

Do not operate your charger and batteries on an inflammable surface, and do not leave the equipment running unsupervised. Protect from damp. Do not subject it to direct sunshine, and do not cover the charger.
Do not charge batteries that are hot to the touch. Allow batteries to cool down to ambient temperature. Charge the battery only using the charger included in the set; do not use any other charger. The charger should only be used to charge the battery included in the set.

Safety Notes regarding LiPo batteries:

- Do not place the battery in water or any other liquid.
- Never heat or incinerate the pack, or place it in a microwave oven.
- Avoid short-circuits, and never charge the battery with reversed polarity
- Do not subject the battery to pressure or shock loads, and never distort or throw the pack
- Never solder directly to the battery
- Do not modify or open the battery
- Batteries must only be charged with a suitable charger; never connect the battery directly to a mains power supply.
- Never charge or discharge a battery in bright sunlight, or close to a heater or open fire.
- Do not use the battery in areas subject to high levels of static electricity.
- Any of these errors can result in damage to the battery, explosion or fire.
- Keep the battery out of the reach of children
- If electrolyte should escape, do not expose it to fire, as the material is highly inflammable and may ignite.
- Do not allow fluid electrolyte to come into contact with eyes. If this should happen, flush with copious amounts of water and contact a doctor without delay.
- The fluid electrolyte can also be removed from clothing and other objects by rinsing with copious amounts of water.

LIABILITY EXCLUSION
Since robbe Modellsport is not in a position to monitor the handling of these batteries, we expressly deny all liability and guarantee claims where the batteries have been incorrectly charged, discharged or handled.

Flight preparation

Switch the transmitter on (Fig. 1). The battery status is shown at the top of the screen. Move the throttle stick and trim to their lowest position. Otherwise the motors will not start. Open the battery compartment cover on the underside of the fuselage, and slide the charged LiPo flight battery into the support frame on the helicopter in the direction of the arrow. Close the battery compartment, and connect the LiPo flight battery (Figs. 2 to 4), taking care not to touch the throttle control. Repeat this procedure every time you wish to fly the model.

Note: the 2.4 GHz transmitter and receiver are supplied already bound at the factory. It will only be necessary to bind the system again after a repair, or if you exchange a component.

Correct procedure!

Fig. 1

Fig. 2

Fitting the lighting batteries

1. Unscrew the top rotor head fairing (Fig. 1).
2. Fit two CR2016 button cells (Figs. 2 and 3) in the fairing you have just removed (positive terminal up, negative terminal down).
3. Screw the fairing, with button cells fitted, onto the rotor head again.
4. If you screw the fairing fully in place, the LEDs on the rotor blades light up.
5. You can switch the LED lights off again by gently turning the fairing anti-clockwise (Fig. 4).
6. If you do not intend using the lights for a long period, please remove the button cells from the battery compartment.

Fig. 1

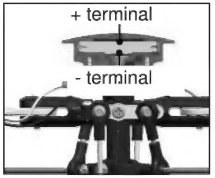


Fig. 2

Fig. 3

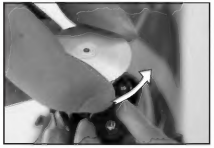
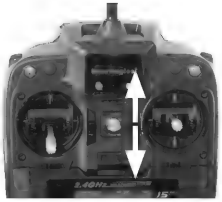


Fig. 4

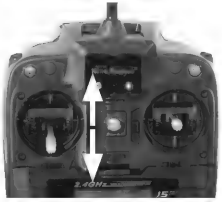
Transmitter settings Mode 1

Throttle trim:
If the rotor starts to move without you touching the throttle stick, or does not respond to stick movements, you need to adjust the throttle trim until the rotor is stationary.



Tail rotor trim:
If the model's nose turns to right or left when it lifts off, adjust the tail rotor trim buttons to correct the rotation until the model maintains a stable heading.

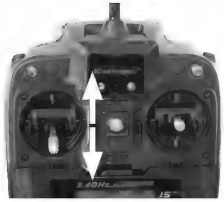
Pitch-axis trim:
If the model flies forward or back when it lifts off, adjust the pitch-axis trim until it hovers over one point.



Roll trim:
If the model moves bodily to left or right when it lifts off, adjust the roll trim until the model remains in a stable hover.

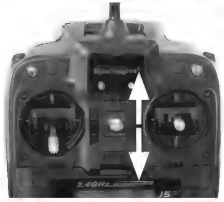
Transmitter settings Mode 2

Throttle trim:
If the rotor starts to move without you touching the throttle stick, or does not respond to stick movements, you need to adjust the throttle trim until the rotor is stationary.



Tail rotor trim:
If the model's nose turns to right or left when it lifts off, adjust the tail rotor trim buttons to correct the rotation until the model maintains a stable heading.

Pitch-axis trim:
If the model flies forward or back when it lifts off, adjust the pitch-axis trim until it hovers over one point.



Roll trim:
If the model moves bodily to left or right when it lifts off, adjust the roll trim until the model remains in a stable hover.

Re-binding the transmitter

This procedure is only necessary after replacing individual components.

Move the throttle stick and trim to the bottom position (motor stopped).

Locate the horizontal trim switch below the right-hand stick unit on the transmitter, and push it to the left while you switch the transmitter on. Slide the LiPo flight battery into the battery compartment on the helicopter, and connect it. The transmitter screen flashes, and you will hear a constant warning tone; this process takes about five seconds. Do not move the model or the transmitter during this period.
Once the binding process is complete, the screen window reverts to normal display status, and the warning sound ceases.

This point is very important:
Do not move the model or the transmitter during the binding process.

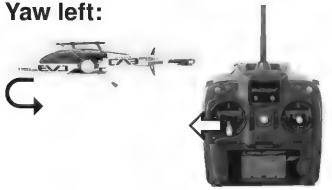
Checking the working systems
Before the first flight it is important to set all the trims - except for the throttle trim - to centre. The throttle stick must be in the "fully back" position (towards you). If the rotor blades turn, adjust the throttle trim until the rotor blades come to a halt.

Controlling the model in Mode 1

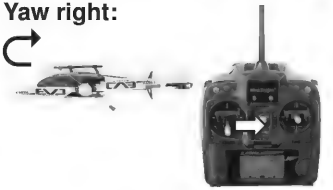
Lift off:

Landing:

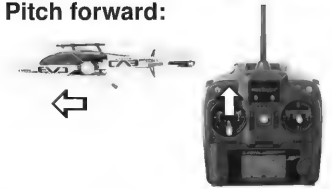
Yaw left:



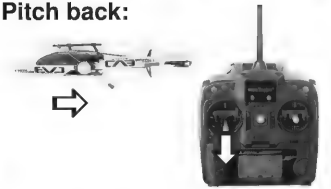
Yaw right:



Pitch forward:

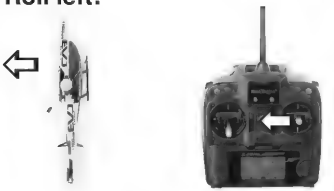


Pitch back:



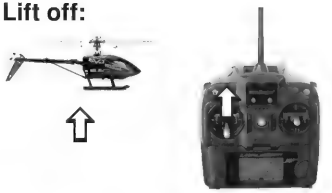
Roll right:

Roll left:



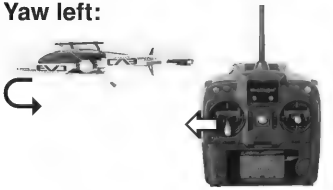
Controlling the model in Mode 2

Lift off:

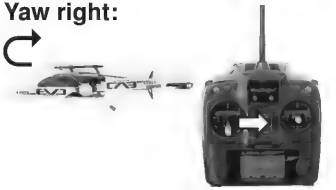


Landing:

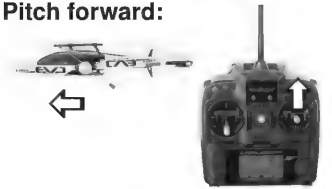
Yaw left:



Yaw right:



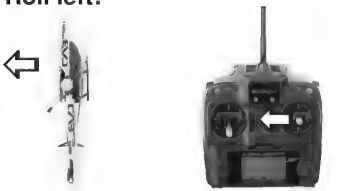
Pitch forward:



Pitch back:

Roll right:

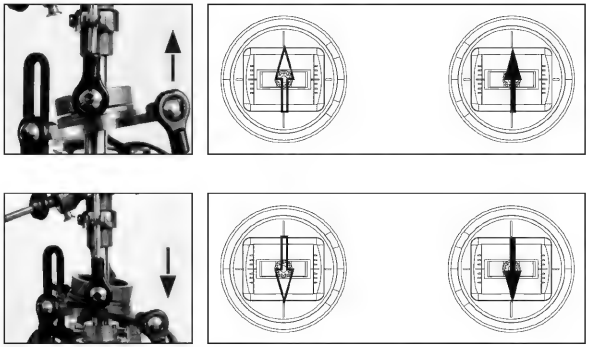
Roll left:



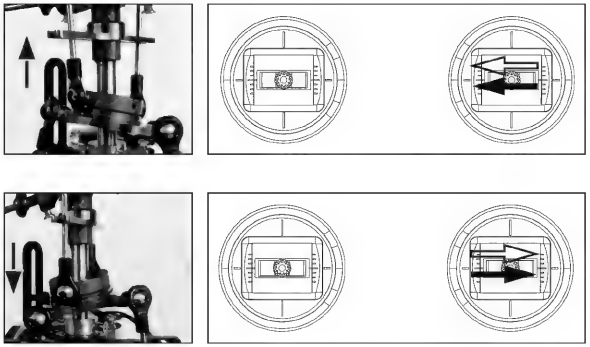
Swashplate actuation system
(as viewed in flight direction)

Mode 1 = ➡
Mode 2 = ➡

The left-hand servo raises the left-hand side of the swashplate when you move the pitch-axis stick up. Pulling the stick back lowers the swashplate.



The right-hand servo raises the swashplate on the right-hand side when you move the roll stick to the left. If you move the stick to the right, the swashplate is lowered.



Preparations for the first flight

Ideally the first flight should take place in a large indoor space devoid of obstructions. If you have to fly the model in the open air, wait for a day with **totally flat calm conditions**.

Important:

Check the state of charge of the transmitter batteries before every flight.

It is essential to charge the flight battery before every flight.

Important Notes

Take-off: Raise the rotor speed slowly and steadily until the model hovers at eye-level. At the same time adjust the trims until the helicopter flies stably and hovers over one point.
At low height (approx. 10 - 15 cm above the ground) the model cannot be trimmed accurately due to the turbulence generated by the rotor.

Landing: slowly and steadily reduce the throttle setting until the model descends and touches down. Never reduce the throttle setting abruptly.
After the landing disconnect the flight battery from the receiver, and only then switch the transmitter off.

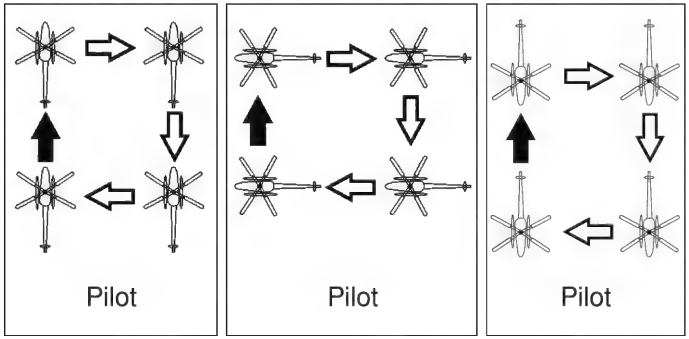
Caution: Stopping (obstructing) the rotor blades when they are turning can cause serious damage to the mechanical system, and may even result in a fire. Immediately move the throttle stick to Idle if this should happen.

Note regarding the flight battery: as soon as you notice a reduction in motor power, land immediately and disconnect the battery. Never continue flying until the battery is flat, as this causes a deep-discharge condition which results in permanent damage. Allow the battery to cool down before recharging it.

Replacing the rotor blades: if a rotor blade is damaged, replace it immediately. When fitting the new rotor blade, tighten the retaining screw just to the point where the blade still swivels smoothly.

The first few flights

Once the model is properly trimmed, you can practise hovering, and carry out manoeuvres such as circles, squares, rectangles and figures-of-eight.

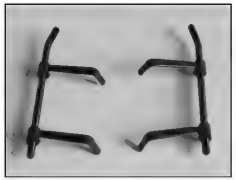


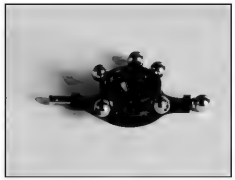
Initially it is always best to stand about two metres away from the model, behind or at right-angles to it; this avoids giving incorrect control commands.
You can fly a square pattern by alternating the direction of flight: away from the pilot, to the pilot's right, and then towards the pilot again.

Tip: when the helicopter is flying with the nose pointing towards you, the controls are reversed (apart from the throttle control).


S2538001


S2538002


S2538003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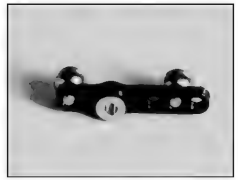
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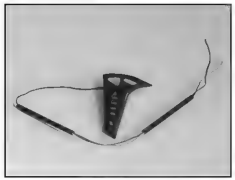
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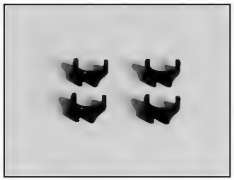
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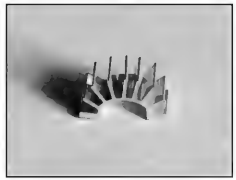
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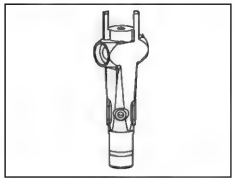
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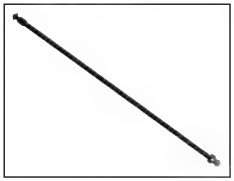
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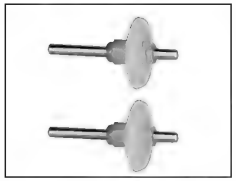
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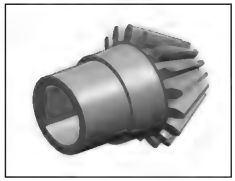
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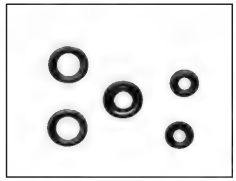
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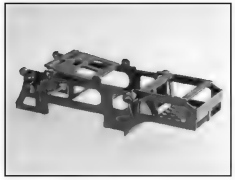
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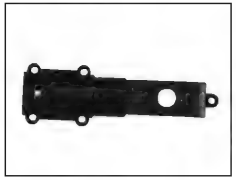
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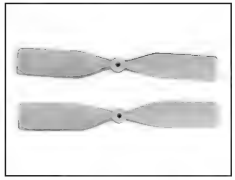
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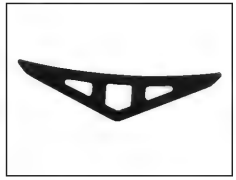
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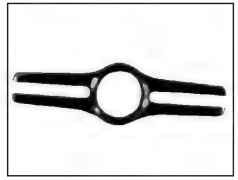
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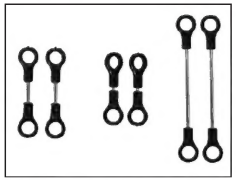
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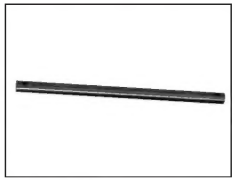
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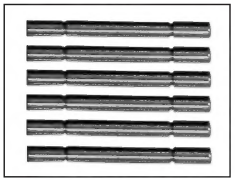
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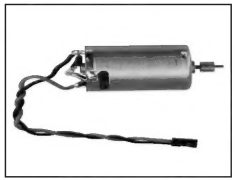
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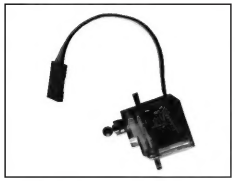
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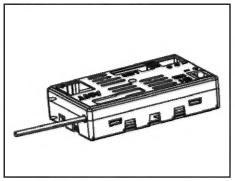
NE252708


NE252704


NE250428

NE250426

When replacing components it is very important to use the correct type of cross-point screwdriver and to tighten the screws with great care.

Do not use thread-lock fluid!

Replacement Parts list - Black Bullet RTF FTR

Order No.	Description
S2538001	Canopy
S2538002	Main rotor blades
S2538003	Landing gear
S2538004	Metal swashplate
S2538005	Flybar
S2538006	Mixer lever
S2538007	Vertical stabiliser + LED + cable
S2538008	Cable tube support
S2538009	Tail boom
S2538010	Screw set
S2538011	Tail rotor motor heat-sink
NE252703	Battery compartment, rotor blade LEDs
NE252705	Rotor head
NE250415	Tail rotor drive shaft and pinion
NE250437	Angle gearbox
NE252608	Bevel gear
NE252609	Ballrace set
NE250412	Main frame
NE251202	Battery frame
NE250410	Main gearwheel
NE250416	Tail rotor gearbox bracket
NE250420	Tail rotor blade (2)
NE250421	Horizontal stabiliser
NE252606	Guide
S2538012	Rotor blade grip
NE250418	Tail boom bracket
NE250408	Pushrod set
NE250413	Main rotor shaft set
NE250407	Flange
NE250414	Blade feathering spindle
NE250411	Main motor
NE250417	Tail rotor motor
NE250435	Servo, 6 g
NE252708	S-FHSS receiver
NE252704	CR2016 3 V button cell
NE250428	LiPo battery, 7.4 V / 1000 mAh
NE250426	Battery charger
NE250429	Mains PSU (not shown)


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CE

robbe Modellsport GmbH & Co. KG hereby declares that this device fulfils the fundamental requirements and other relevant regulations of the appropriate CE directives. The original Conformity Declaration can be found on the Internet at www.robbe.com. Please select the specific device description, then move to “Downloads” and select “Conformity Declaration”.

This symbol means that you should dispose of electrical and electronic equipment separately from the household waste when it reaches the end of its useful life. Take your unwanted equipment to your local council collection point or recycling centre. This requirement applies to member countries of the European Union as well as other non-European countries with a separate waste collection system.

Disposal of batteries

Batteries must not be discarded as domestic refuse. To protect the environment, always return exhausted or defective cells to your local recycling centre. These include retail sales outlets for batteries, and communal toxic waste disposal centres. Cover any bare wires with insulating tape in order to avoid short-circuits.

robbe Modellsport GmbH & Co. KG

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